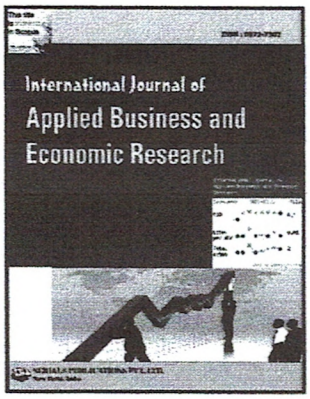

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Supply Chain Efficiency of Shallot in Java Indonesia

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Abstract: A common purpose of this study is to find supply chain channel of shallot from Cirebon, Brebes, and Nganjuk to Kramatjati Central Market Jakarta (*KCMJ*) with its efficiency. Supply chain channel of shallot in java is analyzed in description into the drawing shape. Supply chain efficiency is analyzed by marketing efficiency approach which includes market integration, margins and monopoly index. Market integration is analyzed by Engle Granger co-integration model. The result showed that supply chain channel of shallot from Nganjuk to *KCMJ* relatively shorter than that from Brebes to *KCMJ* and Cirebon to *KCMJ*. Market integration between producer market in Nganjuk with *KCMJ* are most powerful. Total margins and mixed monopoly index happened smallest in supply chain from Nganjuk to *KCMJ*, then followed by Brebes to *KCMJ* and Cirebon to *KCMJ*.Based on mareket integration, margins, and monopoly index can be concluded that supply chain of shallot from Nganjuk to *KCMJ* is the most efficient, then followed by supply chain from Brebes to *KCMJ* and Cirebon to *KCMJ*.

Keywords: Supply chain, market integration, marketing margin, monopoly index, shallot.

1. INTRODUCTION

Shallot has many benefits among others sources of carbohydrate, vitamin A, B, and C (Anyanwu, 2003) and can be consumed either in fresh condition orcooked bulbs (thompson and kelly, 1987). The main adventage of shallot in the daily life is for food matter supply, especially for food flavoring which consumed every day. If distinguished by region of java and outside java, production shallot in Indonesia still concentrated in java. The production center of shallot in Central Java is Brebes Regency.Thesecond biggest production of shallotis East Java with only contribute around 27 percent. The production center of shallot in East Java located in Nganjuk regency.

In indonesia, shallots produced seasonaly while its demand is daily. Shallot demand is use greater for household consumption than non household. The number of shallot consumption in household level

actually not great, but overall large enough needed by people (Nidausholeha, 2007). Thus lack of the shallot commodity supply in market including *KCMJ* can create problems smooth flow of shallot in a supply chain of these commodities.

According to Beamon (1999) supply chain was an integrated process where the raw materials that have produced into the final product will be distributed to theend consumers through distribution, retail, or both. Chopra and Meidl (2004), giving claims that supply chain are the dynamic and covering the flow of information, products, and money of the supply chain level. In a supply chain consisting of parties involved either directly or indirectly in responded to customers. Parties include manufacturing, suppliers, transportation, warehouse, retailer, and customers. While Vorst (2004) explained that supply chain is a number of physical activity and decision making relating to thesubstances flow, information and flow of money.In a supply chain not only consisting of manufacturing and suppliers course, but also depends on transport, warehouse, retailer, and consumers. In a supply chain emphasis is on the flow of substances and information.

Based on the fact above, there needs to be research in general aims to know the supply chain efficiency of shallot in java which outlined in two a special purposes, there areknowing supply chain channel of shallot in Java and its efficiency using approach of margin and monopoly index. The results can be used as a guide for indonesian government in preparing policies related to the development of the commodities.

2. MATERIALS AND METHOD

Basic method used in this research is a descriptive analysis.The purpose of descriptive research is to making description, a systematic outline, factual and accurate concerning the facts, characteristic and relations between the researched facts (Nazirite, 1989). A descriptive method having some benefits, such are

1. the accurate measurement to thesocial researches (singarimbun and Effendi, 1989),
2. Capable to capturing the relationship between phenomenon, hypothesis testing and policy implications (Nazirite, 1989),
3. Dataanalysis was undertaken by analytical approach whith descriptive set to producing relation or the relative proportions of the variables (Widodo and Mukhtar, 2000), and
4. the results of the study is a deductive conclusion (Subyantoro and Suwarto, 2007).

The farmer sample collection was undertaken in purposive, as many as 30 farmers to every location of production center of shallot in Java. The sample of trader levels is undertaken by combining between snowball technical sampling, information from the official court and the whole trader inevery location of production center of shallot in Java.

Supply chain efficiency is analyzed by marketing efficiency approach via calculation margin marketing and index monopoly. Market integration analysis usingmonthly price data of shallot over a period of 2009-2013 on the producers market in Cirebon, Brebes, and Nganjuk, and the consumers market in *KCMJ*. Asmarantaka (2009) said that integration market was a gauge that indicates how far the changes in the price happened in the market reference (of a higher market level as like retail merchants) would cause the occurrence of a change in the followers market (*e.g.* market at the farmer level). There are several econometrical approach for measuring integration market, including explained by martin ravallion, 1986 in

Testing Market Integration and by Engle and Granger (1987) in *Cointegration and Error Correction: Representation, Estimation, and Testing*. In this research, integration market is analyzed by Engle Granger cointegration model consisting two stages, there are the units roots test and cointegration test.

The units roots test is conducted to obtain stasionarity of the series variables which will be analyzed. Methods used to units roots testis *Dickey Fuller* test (*DF*) with a period of *time lag* and *Augmented Dickey Fuller* (*ADF*) with a period of *time lag* more than 1, with: equation:

$$DF \rightarrow \Delta P_t = \alpha + \beta P_{t-1} + \varepsilon_t$$

$$ADF \rightarrow \Delta P_t = \alpha + \beta P_{t-1} + \gamma_2 \Delta P_{t-2} + \varepsilon_t$$

Where:

$$\Delta P_t = P_t - P_{t-1}$$

P_t = The price of shallots at the time of $-t$

β, γ = parameter that will be estimated

ε = interferancederrorvariabel (*error term*)

formulation hypothesis:

H_0: $\beta = 0$; the arrangementof shallot price data (*Pt*) is non stationary

H_1: $\beta < 0$; the arrangementof shallot price data (*Pt*) is stationary

The testing criteria is:

if the value of *ADF* test larger than the value of critical from table mackinnon in the levels of trust 1%, 5%, and 10%, soH_0 received, it means that the price of shallots used containing the units roots or non stationary . If the value of *ADF* test smaller than the value of critical from table mackinnon in the levels of trust 1%, 5%, and 10%, so H_1 received, it means data the price of shallots red is used used uncontaining the units roots or stationary.

The cointegration testing can only be achieved if pairs of data which would be tested shows stationary on the same order. Cointegration testing is undertaken by regressed price variable between producers market in every location of production center of shallot Java with consumers markets in *KCMJ*, then proved whether regressions equation residue containing the roots units or not with *DF* or a *ADF* test as undertaken in the unitroots experiment. The equation model which used, is:

$$P_{it} = b_0 + b_1 P_{2t} + e_t$$

$$\Delta e_t = \alpha + \beta e_{t-1} + \gamma_2 \Delta e_{t-2} + \mu_t$$

where:

P_1 = price in first market

P_2 = price in second market

$$\Delta e_t = e_t - e_{t-1}$$

e_t = residuein time of – t

β, γ = parameter that will be estimated

μ_t = *error term*

The formulation of hypothesis is:

H_0: $\beta = 0$; There is no integration between the markets producers in java with the markets consumers in *KCMJ*.

H_1: $\beta < 0$; There is integration between the markets producers in java with the markets consumers in *KCMJ*.

Then, the price data of shallots and the equation stationary residue cointegration or not tested by test: t as follows:

$$t \text{ count} = \frac{\beta_i}{\text{Se } (\beta_i)}$$

Where:

β_i = estimashed parameter

$Se(\beta_i)$ = *standard error*from estimashed parameter

The testing criteria is:

If $t_{count} \leq t_{table}$ so H_0 accepted, it means that there is no integration between the producer markets in java with the consumer markets in *KCMJ*.

If $t_{count} > t_{table}$ so H_1 accepted, it means that there is integration between the producer markets in java with the consumer markets in *KCMJ*.

Marketing margin is the difference between price at the end consumer level with price at the producers level (farmers). Marketing margin component consisting of marketing necessary expenses institutions to perform the functions of marketing called the marketing cost or functional cost andprofit of the marketing institution. Marketing margins in every traders can be formulated as follows:

$$M_{mi} = P_{si} - P_{bi}$$

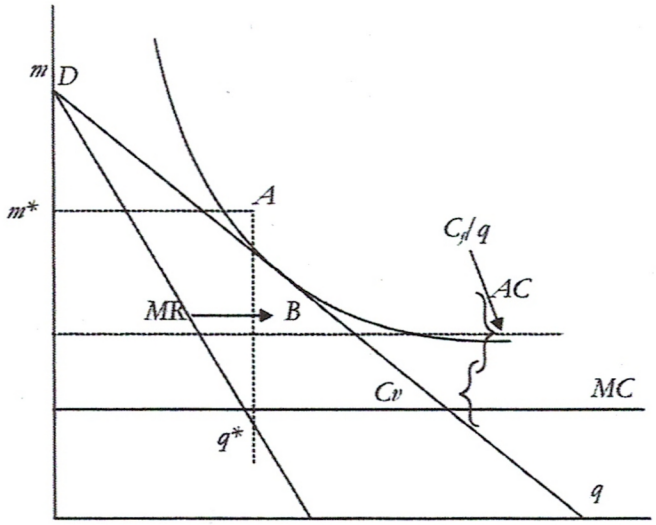
where, M_{mi} is marketing margins; P_{si} is selling price in – i; is purchased price in – i

Marketing Margin Total (*MT*) is a margin sum of each traders level involved in a supply chain of shallot from each location of production center in Java to *KCMJ*, that is formulated as follows:

$$MT = \sum_{i=1}^{n} M_i$$

Where, n is sum of seller level

According to Jamhari and Yonekura (2003) market structure can be learned from monopoly index or Monopoly Indices (*MPI*) each trader involved in marketing channels. Monopoly index is simplification from Lerner Index. If *pb* = the purchased price of; *qb* = the number of purchase; *ps* = the selling price; *qs* = amount of sales; and R = traders revenue so *MPI* can formulated as follows:



Picture 1: Monopolistic Market Model

$$R = psqs - pbqb$$

If $qb = qs = q$; $ps - pb = m$; $m = D(q)$; m is marketing margin, so:

$$R = psq - pbq = (ps - pb)q = mq$$

If Cf = fixed cost and Cv is variable cost, so the total of the marketing cost is

$$C = Cf + Cv$$

While trader profit (π) is:

$$\pi = R - C = mq - Cf - Cvq$$

According to Jamhari and Yonekura (2003), in the monopolistic market, traders maximize the profits by means of marginal revenue (MR) and marginal cost (MC) .

$$MR = MC$$

$$MR = \frac{d(mq)}{dq} = m\frac{dq}{dq} + q\frac{dm}{dq} = m + q\frac{dm}{dq} = m\left(1 + \frac{dm/m}{dq/q}\right)$$

$$m\left(1 + \frac{dm/m}{dq/q}\right) = MC$$

If $\varepsilon = \frac{dq/q}{dm/m}$ is the difference of the elasticity price, so:

$$m\left(1 - \frac{1}{\varepsilon}\right) = MC \text{ and } \frac{1}{\varepsilon} = 1 - \frac{MC}{m}$$

$\frac{1}{\varepsilon}$ is LernerIndex, $0 \le \frac{1}{\varepsilon} \le 1$.

If $m = MC$ $\frac{1}{\varepsilon} = 0$, perfect competition

$$\frac{1}{\varepsilon}\begin{cases} If\ m = MC & \frac{1}{\varepsilon} = 0, \text{ perfect competition} \\ If\ m > MC & 0 < \frac{1}{\varepsilon} < 1 \\ If\ m \to \infty, & \frac{1}{\varepsilon} = 1,\ monopoly \end{cases}$$

Index Lerner can be simplified with *MPI* as follows:

$$MPI = \frac{m}{MC} \qquad MC = \frac{dC}{dQ} = Cv,$$

$$MPI = \frac{m}{Cv}$$

Higher *MPI* shows thehigher monopoly levels.

The competition level of the marketing institution will be measured with an index monopolies (*MPI*) as follows:

$$MPI = \frac{m}{Cv}$$

where, *m* is marketing margin; *Cv* is Variable Cost

3. RESULTS AND DISCUSSION

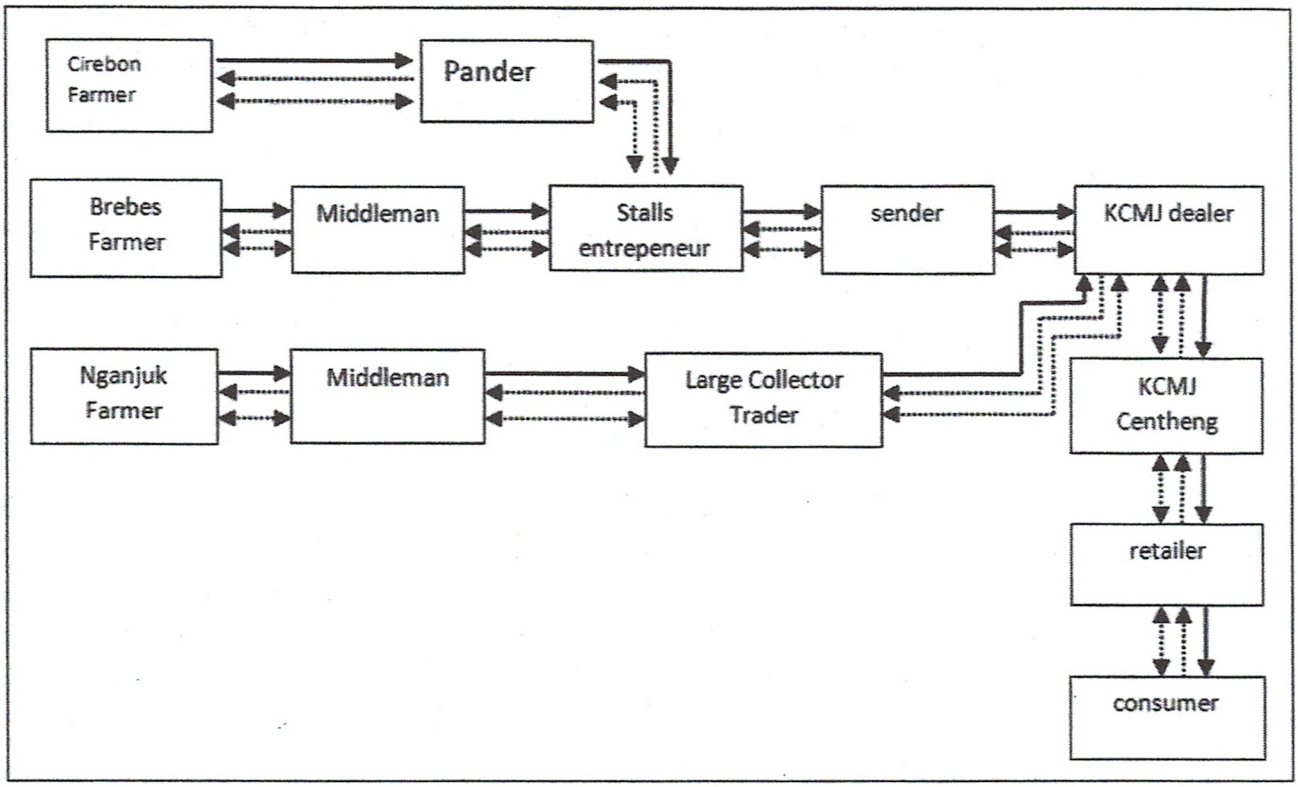
Supply Chain Channel of Shallot in Java

Channel occurring in supply chain ofshallotfrom farmer in Cirebon, Brebes, and Nganjuk to customers in jakarta, can be explained in the picture 1. Based on the picture, the subject of supply chain fromCirebon in Jakarta covering farmers as suppliers, pander, stalls entrepeneur in Brebes, sender in Brebes, dealer in *KCMJ*, centheng in *KCMJ*, retailer, and consumers. Supply chain from Brebes to jakarta involving farmers, middleman, stalls entrepeneur, sender, dealer in *KCMJ*, centheng in *KCMJ*, retailer, and consumers. While the supply chain from Nganjuk is less, there are the farmers, middleman, whole collector trader, dealer in *KCMJ*, centheng in *KCMJ*, retailer, and consumers .

Supply Chain Efficiency of Shallot

Market Integration Approach

Table 1 showed that the statistics *ADF* for the fourth price data series of shallots usedsignificant either for an equation containing intersep, intersep and trendor without intersep and trends. The result giving the meaning of fourth price variable containing the units roots or not stationary at the level or *I*(0). At the *first*



Picture 2: Channel ofsupply chain of shallotin Java

Note: 1a is Brebes farmer; 1b = Cirebon Farmer; 1c = Nganjuk Farmer; 2 = calo/komosioner; 3 dan 4 = middleman; 5 = Stalls Entrepreneur; 6 = Large Collector Trader; 7 = Sender; 8 = *KCMJ* dealer; 9 = KCMJCentheng; 10 = Retailer; 11= Consumer;

difference I(1), *ADF* statistics value for the fourth price series of shallots significant either for an equation containing intersep, intersep and trends or without intersep and trends. Those results showed that fourthprice variable of shallots are no longer containing the unit roots or stationary on *first difference* or *I*(1). Economically results showed that fourth price series of shallots which was used have an average value and constant variant, invariable all the time (*time-varying mean and variance*).

Table 1
ADF Statistic fromRoots Testing of Price Series Unit

	ADF Value (level)			*ADF Value (first difference)*		
Price Series	*1*	*2*	*3*	*1*	*2*	*3*
Cirebon	–2,2236	–3,2610	–0,8708	–9,1938	–9,1938	–9,2168
Brebes	–2,3182	–2,9545	–0,9928	–8,9004	–8,8069	–8,9507
Nganjuk	–1.8196	–2,3938	–0,4091	–8.2420	–8.2087	–8.2449
KCMJ	–2,4595	–3,1959	–0,9796	–8,5799	–8,5013	–8,6341
Mackinnon						
Critical						

Cont. table 1

	ADF Value (level)			*ADF Value (first difference)*		
Price Series	*1*	*2*	*3*	*1*	*2*	*3*
Value						
a. 1%	–3.5572	–4,1219	–2,6026	–3.5478	–4.1249	–2.6033
b. 5%	–2.9167	–3,4875	–1,9462	–2.9127	–3.4889	–1.9463
c. 10%	–2.5958	–3,1718	–1,6187	–2.5937	–3.1727	–1.6188

Note: 1. Model with intersep
2. Model with intersep and trend
3. Model without intersep and trend

Resource: Secondary Data Analisys, 2014

After data stasionerit as test, the next stage is cointegration test. This test can be performed because the price of the four price variables of shallot used stationary in the same order, there are *first difference* or *I*(1). In this research used twelve price series relations and the value of statistical *ADF* test to the larger equation regression residue than the Mackinnon critical value at the *first difference I*(1) to significance of 1%, 5%, and 10%, so that can be concluded that already occurred cointegration between shallot markets to twelve the combinations. The occurrence of coin tegration showed long-term balance which have been occurred among those markets. If there is the increasing or decreasingshallots price in each market will integrated or if happenprice movements in a market, then the price in other parts also will change.

Table 2
Cointegration Between Series Price

	Cirebon		*Brebes*		*Nganjuk*		*KCMJ*	
Series Price	*β*	*ADF Value*	*β*	*ADF Value*	*β*	*ADF Value*	*β*	*Nilai ADF*
Cirebon			–0,8192***	–3,9038	–0,7686***	–4,4011	–0,5034*	–2,7047
Brebes	–0,7637***	–3,8329			–1,6194***	–7,2286	–1,5646***	–6,7797
Nganjuk	–0,7144***	–4,1031	–1,6656***	–7,3068			–1,5833***	–7,2894
KCMJ	–0,5423**	–2,9664	–1,5403***	6,7611	–1,5526***	7,2870		

Note: *** significantin 99% confidence level
** significant in 95% confidence level
* significant in 90% confidence level

Resource: Secondary Data Analysis, 2014

Based on the average score and standard deviations from *b* coefficients in Table 2, so the integration level of shallot can be classified into strong, medium, and weak, as shown in table 7.5. Almost 50% of the relationship between marketsshowed thestrongintegration level, 42% medium integration, and 8% weak integration. Strong integration market happened on the markets relations of Nganjuk-*KCMJ* and Brebes-*KCMJ*, even if it was seen frombcoefficientsvalue is still higher who ties Nganjuk-*KCMJ*. This indicates that Nganjuk-*KCMJ* market integration more powerful than Brebes-*KCMJ*, so that it can be said more efficient. The weak integration happened to the relationship between Cirebon-*KCMJ* market, this can happen because the majority of trade shallot derived from Cirebon cannot directly go straight into

KCMJ, but passes stalls entrepreneur in Brebes. If it is sorted by strong markets and the weak integration, the most powerful relationships come fromNganjuk-*KCMJ*; then Brebes-*KCMJ*; and Cirebon-*KCMJ*. The condition is also give meaning that supply chain of shallot from Nganjuk to *KCMJ* is the most efficient, then followed by Brebes to *KCMJ* and Cirebon to *KCMJ*.

Marketing Margin Approach and Monopoly Index

In Table 3 it can be seen that each the subject of supply chain from Cirebon to *KCMJ* spend different marketing cost. This is shown by the *DP* cost or mark which is issued by pander and that cost does not issued by the other chain subject. Stalls entrepreneurs with the sender also have difference issued marketing cost, where the sender pay the cost of songgol, rogol, labor foreman, fuel, and a langsir driver.

Marketing costs between sender and croupier also there have differences, there is: croupier not issued songgol costs, rogol, fuel, and the langsir drivers, sorting and grading, depreciation and packaging. That condition was caused because croupier only received shallot from sender then immediately sold to centheng without any treatment. Between croupier and centheng also occurring differences marketing costs, where centheng issued depreciation cost, sorting, skinpeel and leavescut. This happened because centheng sell theshallot in two forms, there are the form which still with skin and skin peel. Retailer didn't issued sticker cost,skin peel and leaves cut centheng.

The biggest total margin of supply chain of shallot from Cirebon to *KCMJ* is 11.950. The highest margin is on a centheng level and retailers in Jakarta which is reaches Rp 4.000 and smallest enjoyed by pander Rp 700. After knowing marketing costs and marketing margin, can be counted its monopoly index. The biggest monopoly index value in supply chain of shallot from Cirebon to *KCMJ* is 11,97. That biggest value is on croupier in *KCMJ*, then followed by stalls entrepreneur, pendar, sender, retailer, and centheng. This indicates that croupier in *KCMJ* have high dominance in supply chain of shallot from two regencies to *KCMJ*. Pander located in Cirebon having monopoly index value appreciably higher by 1,92, it is because many of panders that operates in Cirebon that can be dropped the farmers mental of shallot.

Middleman in Brebes different with stalls entrepreneur in terms of marketing costs, where middleman pay the harvesting cost while stalls entrepreneurs didn't. This condition caused because stalls entrepreneur get the shallot from middleman whose duty buy shallots belonging to farmers. The stalls entrepreneurs with sender also there were differences in the cost of marketing issued, where sender issued songgol costs, rogol, labor foreman, fuel, and thelangsir drivers.

The marketing cost between the sender and croupier also have difference, there didn't issued cost of songgol, rogol, fuel, and a langsir driver, sorting and grading, depreciation and packaging from croupier. This is because croupier only received originally shallot from sender then directly sold to centheng without any treatment. Between croupier and centheng also happened difference marketing costs, where centheng spent depreciation cost, sorting, skinpeel and leavescut. This is because centheng sells shallot in two forms, there are form which still has the skin and skinpeel. retailer not pay for stickers cost, skinpeel and leavescut like centheng.

The total margins value in supply chain of shallot from Brebesto *KCMJ* is smaller than supply chain from Cirebon into *KCMJ*, Rp 11.750. The highest margins value is also on a centheng level and retailer in Jakarta Rp 4,000 and smallest enjoyed by middleman Rp 500. Monopoly indexvalue for supply chain of

shallot from Brebesto *KCMJ* is smaller than supply chain from Cirebonto *KCMJ* as much as 11,93. The highest monopoly indexvalueis on thecroupier in *KCMJ*, thenfollowed by stalls intrepreneur, middleman, sender, retailer, and centheng. That situation give meaning that croupier in *KCMJ* have biggest dominance in supply chain of shallot from Brebes to *KCMJ*.

Between middleman and collector traders in the large scale in Nganjuk happened difference in marketing costs in terms of the harvest cost, where that cost is only issued by middleman. Collector traders in the large scale issued the cost of packaging, while middleman didn't. This is caused by the packing which purchased by collector trader in a large scale is given to middleman, so middleman do not have to buy. Marketing costs incurred by collector trader in a large scale is different. This is shown by the unloading cost, stickers, cleanliness and security, electricity, flat, and retribution.

Dealer in *KCMJ* didn't pay depreciations as well as collector traders in a large scale. Between croupier and centheng also happened difference in marketing costs, where centheng spent depreciations, sorting, skinpeel and leavescut. This is because centheng sell shallot in two forms, there are form which still has the skin and skinpeel. Retailer didn't issued stickers cost, skinpeel and leavescut like centheng.

The smallest total margin value in a chain supply of shallot from Nganjuk to *KCMJ* is 10.750. The highest margin value is also on a centheng level and retailer in Jakarta as much as Rp 4,000 and smallest enjoyed by middleman Rp 500. The smallest total monopoly value indexin supply chain of shallot from Nganjuk to *KCMJ* is 10.05. The greatest monopoly index value in supply chain of shallot from NganjuktoKCMJ in the croupier level is 3.16, followed by collector traders in a large scale, middleman, retailer, and centheng. This condition shows that collector traders in a large scale have biggest dominance in supply chain of shallot from Nganjuk to *KCMJ*.

There is a difference in expenses of marketing costsbetweenmiddleman in Brebes and Nganjuk, namely drying cost. This is caused by middleman in Brebes not undertaken selfdrying, because after the harvest in farmers directly taken to stalls etrepreneur, so drying step undertaken by labor in stalls. While middleman in Nganjuk undertaken drying at his home after the harvest in farmers, then directly taken to collector trader in a large scale as the demand. The stalls in Brebes get theshallot from pander in Cirebon and middleman in Brebes, so there is a difference spending transportation costs.

The sender in Brebes also received shallot from stalls entrepreneur from Cirebon and Brebes, but because the sender buy them at stalls in entrepreneurs stalls so there are no differences in marketing costs. Dealer in *KCMJ* get shallotsupply from Cirebon, Brebes, and Nganjuk so make distinction expenditure marketing costs especially to the transportation costs. Centheng and retailer not issued the differently marketing cost pertaining to three supply chain of shallot. It was because centheng and retailer does not distinguish between originaly shallot, but the important part is availabled shallots.

Based on the margins total value and mixed monopoly index on the respective supply chain of shallot shows that supply chain from Nganjuk to *KCMJ* is most efficient than supply chain from Cirebon and Brebes to *KCMJ*. This condition caused because the value of total margins and mixed monopoly index is smallest. In addition, it can be seen from the offender involved in the supply chain from Nganjuk to *KCMJ* is least compared with supply chain rom Cirebon and Brebes to *KCMJ*.

Table 3
Margin Value and Monopoly Index in shallot supply chain in Java (Per Kilogram)

	Supply Chain		
Chain Subject	*Cirebon–JKT*	*Brebes–JKT*	*Nganjuk–JKT*
Farmers			
(a) Selling cost	5. 463,00	5. 363,00	4. 308,00
Pander			
(a) purchased cost	5. 463,00	–	–
(b) yransportation cost	57,14	–	–
(c) prepay credit	7,14	–	–
(d) meals and cigarette	14,28	–	–
(e) DP cost	285,71		
(f) Profit	335,73	–	–
(g) selling price	6. 163,00	–	–
(h) margin	700,00	–	–
(i) monopoly index	1,92		
Middleman			
(a) purchased price	–	5. 363,00	4. 308,00
(b) prepay credit	–	2,27	1,43
(c) transportation cost	–	25,16	0
(d) harvesting cost	–	208,33	208,57
(e) drying cost		–	14,28
(f) depreciation cost		53,63	43,08
(g) profit	–	210,16	232,64
(h) purchased price	–	5. 863,00	4. 808,00
(i) margin	–	500,00	500,00
(j) monopoly index		1,72	1,87
Collector in Lage Scale			
(a) purchased price	–	–	4. 808,00
(b) sorting, grading, weighing, and packaging cost	–	–	100,00
(c) prepay credit			1,85
(d) packaging cost (waring)	–	–	24,28
(e) transportation cost	–	–	228,57
(f) depreciation cost			48,08
(g) profit	–	–	597,22
(h) purchased price	–	–	5. 808,00
(i) margin	–	–	1. 000,00
(j) monopoly index			2,48

Cont. table 3

	Supply Chain		
Chain Subject	*Cirebon–JKT*	*Brebes–JKT*	*Nganjuk–JKT*
Stalls Entrepreneurs			
(a) purchased price	6. 163,00	5. 863,00	–
(b) sorting and grading cost	214,28	214,28	–
(c) storaging cost	11,42	11,42	–
(d) weighing cost	57,14	57,14	–
(e) prepay credit	1,17	1,17	–
(f) depreciation cost	61,63	58,63	–
(g) transportation cost	57,14	35,71	–
(h) profit	597,22	621,65	–
(i) selling price	7. 163,00	6. 863,00	
(j) margin	1. 000,00	1. 000,00	–
(k) monopoly index	2,48	2,64	
Sender			
(a) purchased price	7. 163,00	6. 863,00	–
(b) sorting and grading cost	171,42	171,42	–
(c) songgol cost	85,71	85,71	–
(d) rogol cost	6,67	6,67	–
(e) packaging cost (waring)	25,71	25,71	–
(f) heaver cost	21,42	21,42	–
(g) fuel (blower and angkut butik)	28,57	28,57	–
(h) prepay credit	1,14	1,14	–
(i) transportation cost	185,71	185,71	–
(j) langsir driver cost	3,57	3,57	–
(k) depreciation cost	69,63	69,63	
(l) profit	400,45	400,45	–
(m) selling price	8. 193,00	7. 863,00	–
(n) margin	1. 000,00	1. 000,00	–
(o) monopoly index	1,67	1,67	
Croupier			
(a) purchased price	8. 193,00	7. 863,00	5. 808,00
(b) loading and unloading cost	57,14	57,14	57,14
(c) weighing cost	10,00	10,00	10,00
(d) sticking cost	1,50	1,50	1,50
(e) cleaness and protecting cost	0,14	0,14	0,14
(f) electricity cost	0,86	0,86	0,86

Cont. table 3

	Supply Chain		
Chain Subject	*Cirebon–JKT*	*Brebes–JKT*	*Nganjuk–JKT*
(g) *KCMJ* retribution cost	2,71	2,71	2,71
(h) prepay credit	1,19	1,19	1,90
(i) salary	86,35	86,35	86,35
(j) transportation cost	185,17	185,17	228,57
(k) arragement cost	4,28	4,28	4,28
(l) retribution cost	1,78	1,78	1,78
(m) profit	898,34	898,34	854,77
(n) selling price	9. 443,00	9. 113,00	7. 058,00
(o) margin	1. 250,00	1. 250,00	1. 250,00
(p) monopoly index	3,55	3,55	3,16
Centheng			
(a) purchased cost	9. 443,00	9. 113,00	7. 058,00
(b) packaging cost (plastic)	30,00	30,00	30,00
(c) heaver cost	100,00	100,00	100,00
(d) cleaness cost (rubbish)	3,45	3,45	3,45
(e) sorting, leaves cut and peel	2. 500,00	2. 500,00	2. 500,00
(f) retribution	5,91	5,91	5,91
(g) prepay credit	0,85	0,85	0,85
(h) sticking cost	12,09	12,09	12,09
(i) electricity cost	3,45	3,45	3,45
(j) rubbish cost	3,45	3,45	3,45
(k) croupier sending cost	50,66	50,66	50,66
(l) salary	86,35	86,35	86,35
(m) depreciation cost	86,93	86,93	86,93
(n) profit	844,00	844,00	844,00
(o) selling price	13. 443,00	13. 113,00	11. 058,00
(p) margin	4. 000,00	4. 000,00	4. 000,00
(q) monopoly index	1,11	1,11	1,11
Retailer			
(a) purchased price	13. 443,00	11. 363,00	9. 308,00
(b) packaging cost (plastic)	384,61	384,61	384,61
(c) retribution cost	384,61	384,61	384,61
(d) parking cost	153,85	153,85	153,85
(e) heaver cost	117,65	117,65	117,65
(f) cleaness cost	153,85	153,85	153,85
(g) protecting cost	769,23	769,23	769,23

Cont. table 3

	Supply Chain		
Chain Subject	*Cirebon–JKT*	*Brebes–JKT*	*Nganjuk–JKT*
(h) electricity cost	384,61	384,61	384,61
(i) transportation cost	461,54	461,54	461,54
(j) prepay credit	0,74	0,74	0,74
(k) depreciation cost	538,46	538,46	538,46
(l) profit	768,50	768,50	768,50
(m) selling price	17. 443,00	17. 113,00	15. 058,00
(n) margin	4. 000,00	4. 000,00	4. 000,00
(o) monopoly index	1,24	1,24	1,24
Consumers			
(a) purchased price	17. 443,00	17. 113,00	15. 058,00
Total margin	11. 950,00	11. 750,00	10. 750,00
Mixed monopoly index	11,97	11,93	9,86

Note: JKT is Jakarta

4. CONCLUSSION

Supply chain channel of shallot from Nganjuk to *KCMJ* relatively shorter than a chain fromBrebes to *KCMJ* and Cirebon to *KCMJ*. The condition demonstrated by an absence of seven players supply chain of shallot from Nganjuk to *KCMJ* and eight the perpetrators to the chains from Brebes to Jakarta and Cirebon to *KCMJ*. There are market integration between the producersmarkets of shallot inCirebon, Brebes, and Nganjuk with the consumers markets in *KCMJ*. Markets integration in Nganjuk with *KCMJ* are most powerful. Based on the totalmargin and mixed monopoly index, then the supply chain from Nganjuk-Jakarta have the smallest value compared with a chain from Brebes to Jakarta and Cirebon to Jakarta. The results show that: from market integration views, marketing margin, and the supply chain monopoly index of shallot from Nganjuk to Jakarta is the most efficient, then followed by a chain from Brebes to *KCMJ* and Cirebon to *KCMJ*.

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